

ORUM & ROTH
53 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3606
312.922.6262 PHONE
312.922.7747 FAX

10/019727
Attorney Docket Number: 112396

PATENTS

JC07 Rec'd PCT/PTO 20 DEC 2001

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)**

International Application Number: PCT/DE00/01883

International Filing Date: 06/14/00

Priority Date Claimed: 06/25/99

Title of Invention: METHOD AND DEVICE FOR CONNECTING SUPERIMPOSED PLATES

Applicant(s) for DO/EO/US: TOX Pressotechnik GmbH

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items under 35 U.S.C. 371:

1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. This express request to immediately begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(I).
4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. A copy of the international Application as filed (35 U.S.C. 371(c)(2)):
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau
 - c. is not required, as the application was filed in the United States Receiving Office (RO/US).
6. A translation of the International Application into English.
7. Amendments to the claims of the International Application under PCT Article 19:
 - a. are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. have been transmitted by the International Bureau
 - c. have not been made, however, the time limit for making such amendments has **NOT** expired.
 - d. have not been made and will not be made.
8. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)):
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau.
 - c. will follow.
10. A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
11. Copy of the:
 - a. International Preliminary Examination Report.
 - b. International Search Report
12. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
13. An Assignment document for recording with a separate cover sheet in compliance with 37 CFR 3.28 and 3.31:
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau
 - c. will follow
14. A **FIRST** preliminary amendment.
15. A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. A substitute specification.
17. A change of power of attorney and/or address letter.
18. Applicant claims Small Entity status.

19. Other items of information
 20. 1 Sheet of drawings is enclosed.
 21. The U.S. National Fee (35 U S C. 371(c)(1)) and other fees as follows

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NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):				TOTAL
<input type="checkbox"/> Search Report has been prepared by the EPO or JPO				\$0
<input type="checkbox"/> International Preliminary Examination fee paid to USPTO (37 CFR 1.482)				\$0
<input type="checkbox"/> No International Preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))				\$0
<input checked="" type="checkbox"/> Neither International Preliminary examination fee (37 CFR 1.482) nor International Search fee (37 CFR 1.445(a)(2)) paid to USPTO				\$1,040
<input type="checkbox"/> International Preliminary Examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)				\$0
<input type="checkbox"/> Surcharge for furnishing the oath of declaration later than 20 months from the earliest claimed priority date (37 CFR 1.492(e))				\$0
<input type="checkbox"/> Surcharge for furnishing the oath of declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(e))				\$0
<input type="checkbox"/> Processing fee for furnishing the English translation later than the 20 months from the earliest claimed priority date (37 CFR 1.492(f))				\$0
<input type="checkbox"/> Processing fee for furnishing the English translation later than the 30 months from the earliest claimed priority date (37 CFR 1.492(f))				\$0
<input type="checkbox"/> Assignment Recordal Sheet				\$0
		Number of Claims Filed	Number of Claims Allowed	Number of Extra Claims
Total Number of Claims Filed		16	20	0
Number of Independent Claims Filed		2	3	0
		Yes	No	Rate per Extra Claim
Number of Multiple Dependent Claims Filed				\$18
				\$80
Total Fees Enclosed for Large Entity				
Total Fees Enclosed for Small Entity (1/2 of Large Entity)				
a. <input checked="" type="checkbox"/>	A check in the amount of \$ 1040 to cover the fee is enclosed.			
b. <input type="checkbox"/>	Please charge my deposit account \$ 0 to cover the above fees. A duplicate copy of this sheet is enclosed.			
c. <input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge any additional fees which may be required, including request for extension and payment of extension fees due, when this is not explicitly requested by applicants, with a view toward avoidance of abandonment, to Deposit account No. 04-2219, referencing our docket # 12396. Any overpayment should be credited to this account.			

Please direct all communication in connection with this application to the undersigned at:

DRUM & ROTH
53 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3606



Keith H. Orum
Attorney for Applicant
Registration Number 33985

Andrew D. Babcock
Attorney for Applicant
Registration Number 44517

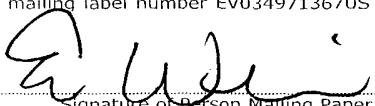
Susan M. Keating
Attorney for Applicant
Registration Number 41887

George F. Dvorak
Attorney for Applicant
Registration Number 17656

CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this transmittal letter and the documents referred to as enclosed therein are being deposited with the United States Postal Service on December 20, 2001, in an envelope as "Express Mail Post Office Addressee", mailing label number EV034971367US addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Erin Weinner
Name of Person Mailing Paper



Signature of Person Mailing Paper

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PATENT

#5/a

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: TOX PRESSOTECHNIK GMBH

Serial Number: to be assigned

PCT Application Number: PCT/DE00/01883

Filed: December 20, 2001

Title: METHOD AND DEVICE FOR CONNECTING SUPERIMPOSED PLATES

Attorney Docket Number: 12396

PRELIMINARY AMENDMENT

Hon. Commissioner of
Patents and Trademarks
Box PCT
Washington, D.C. 20231

December 20, 2001

Sir:

Please amend the newly submitted application described above as follows:

In the Claims:

In claim 3, line 1, please delete --oder 2--

In claim 4, line 1, please delete --oder 2--

In claim 5, line 1, please delete -- einem der vorhergehenden Ansprüche-- and insert "Anspruch 1"

In claim 7, line 1 please delete -- einem der vorhergehenden Ansprüche -- and insert "Anspruch 1"

In claim 10, line 1, please delete -- oder 9--

In claim 12, line 1, please delete -- oder 9--

In claim 14, line 1, please delete -- einem der Ansprüche 8 bis 13-- and insert "Anspruch 8"

In claim 15, line 1, please delete -- einem der Ansprüche 8 bis 14-- and insert "Anspruch 8"

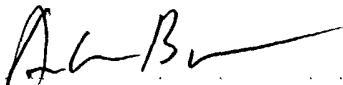
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New US National Application
Based on: PCT/DE00/01883
12396
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REMARKS

The foregoing amendments are primarily for the purpose of eliminating multiple dependencies, and placing the claims in proper form.

Respectfully submitted,



Andrew D. Babcock
Attorney for Applicant
Registration Number 44517

DRUM & ROTH
53 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604-3606
312.922.6262 PHONE
312.922.7747 FAX

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Method and device for connecting plates lying on top of one another

The invention develops from a method and/or a device for connecting plates lying on top of one another according to the clinching process of the generic principal claim and the secondary claim 8.

Two methods and/or devices are known for clinching i.e. for once a die without a cutting part and on the other hand a die with such a cutting part. The cutting part separates the deep-drawn plate section in portions from the plate, where it was drawn from. During the non-cutting clinching the deep-drawn plate sections flow during the squeezing radial outwards, like snap fasteners, and sub-seize the plates. Particularly then, if a connection from plates of different hardness or materials takes place, different stresses result from the different consistency, which can be a disadvantage for the connection. On the one hand a certain weakening results through the deep-drawing and the therefore occurring thinning of the material, on the other hand a spike-connection of the material results through the sub-seizing, what represents the actual connection.

With a well-known connection (DE-OS 35 32 899) plate pieces lying on top of each other are punched by punching cams along a part of their outlining lines and are deep-drawn from the plate plane, after which, by means of the die and a back pressure area in the bottom die, the plate section closer to the plates is widened by squeezing and sub-seizes the first plate. Apart from the fact that an unretentive spot within the area of the connection results in the plate, such a punching procedure causes a substantial reduction of the strength, which does not occur with another well-known generic clinching process (EP-PS 0,215,449), with which the plate sections are deep-drawn by the die into a deep-drawing opening and are afterwards squeezed wide. This results in an extremely actuated and positive locking joint point, which however again can lead to connecting problems with different materials of the plates, as aforementioned above. During such a snap-fastener-like connection the spike-connection is simply not as strong as with the unilateral punching cam. In order to accommodate for that, there are known clinching processes (PCT/EP 96/0305, WO 97/02912), in which the side walls of the deep-drawing opening are designed flexible, so that after the deep-drawing procedure desired clearances result for the squeezing procedure. Apart from the fact that due to the lacking radial resistance an actuated interlinking of the displaced and sub-seized materials cannot take place, by which clearances causing a loosening would be filled, tensions caused by the axially symmetrical radial expansion remain in the connecting point, which are not reduced however, which likewise depends on the radial yielding of the walls of the deep-drawing opening and which happens at the expense of the strength of the connecting point.

The method of the invention according to the principal claim, and/or the device of the invention for the working of the method according to the secondary claim 8, has in contrast to this the benefit that plates of different materials can be connected with high strength. So also plates from metal and plastic can be connected, with sufficient durability. It is particularly favorable that due to the different deformation in two cross directions of the plate sections a relatively strong material displacement takes place in the first cross direction and their transitions to the second cross direction with corresponding strong sub-seizing of the plates by

the plate sections, however at the of the thickness and also the strength of the wall parts. Whereas in the second cross direction due to the wedge form of the die fewer material is displaced and so that the connecting neck between the bases of the plate sections and the plates is relatively thick and thus very firmly designed. Since the transition between these two extremes is flexible, the strong neck of the wall parts in the second cross direction works itself and the strong sub-seizing by the plate sections in the first cross direction in combination result in a total improvement of the connection, for example also compared with all other well-known clinching connections.

After a favorable embodiment of the method according to the invention the die and the deep-drawing opening exhibit a circular cross-section or an oval cross section and the work area of the die is designed wedge-shaped with an essentially rectangular front surface, so that at the opposite sides of the die strong thinning up to tear separation of the wall parts of the second and additional plate sections take place, so that the radial displacement is held back by the wedge areas.

After a further favorable embodiment of the invention the volume of the deep-drawing opening is constant in the press direction and transverse to the press direction, so that during the squeezing procedure the longitudinal extension as well as the transverse extension of the deep-drawn plate sections is limited unyieldingly and an edge area, running in deep-drawing direction, results (EP 0,215,449).

After a further favorable embodiment of the invention the volume of the deep-drawing opening can be increased in longitudinal extension and/or transverse extension (DE-GM 297 00 868, WO 97/02912).

After a further favorable embodiment of the invention existing edges of recesses, pointing towards the plate section, engage during the squeezing procedure at the base of the deep-drawing opening in the first plate section and obstruct the radial outward flow of the material, whereby displaced material from the second or above plate section flows into the resulting radial clearances.

After a further favorable embodiment of the invention the obstruction of the radial outward flows takes place in the first cross direction. The edges obstructing the radial outward flow can of course run also in other directions, if this is of advantage for the inventive procedure.

After a further favorable embodiment of the invention the first and third plate can consist of metal and the second plate lying between them can consist of plastic. Such material combinations could so far not be connected satisfactory in a clinching process, since the soft intermediate material prevented the required form-fit and grip.

After an embodiment of the invention concerning the device according to claim 8 the die above the wedge shape and the deep-drawing opening exhibits a circular or oval cross section.

After a further favorable embodiment of the invention the deep-drawing opening in the bottom die is designed in radial and axial direction as a blind opening, whose side walls run in

direction of movement of the die and are unyielding, like the bottom plane of the deep-drawing opening.

After an alternative favorable embodiment of the invention the side walls of the deep-drawing opening are radially flexibly designed, which can be achieved by an elastic medium.

After a further favorable embodiment of the invention the base of the deep-drawing opening, although actually unyielding, can be adjusted a certain stroke length when exceeding a certain pressing force of the die.

After a further favorable embodiment of the invention a recess is provided in the base of the deep-drawing opening, whereby the recess exhibits edges towards the bottom plane, which fit into the plate section after the deep-drawing, in order to obstruct thereby the radial flow of material during the squeezing procedure, what in turn creates clearances, into which the material of the second or above plate sections can flow.

After a further favorable embodiment of the invention the recesses are designed as concentric or central symmetrical key grooves, which are arranged continuously and/or misaligned to each other.

Further benefits and favorable embodiments of the invention can be taken from the following description of the drawing and the claims.

A design example of the subject of the invention is represented in the drawing and is following described in more detail. Shown are:

- Figure 1 a tool unit, including plates, before their processing
- Figure 2 a view in accordance with arrow II in figure 1
- Figure 3 a section in accordance with arrow III in figure 1
- Figure 4 a section through a finished connection point, according to the tool position in figure 1, but in different scale and
- Figure 5 a section through a finished connection point in accordance with figure 4, however it is rotated 90°.

In Figure 1 a die 1 is shown in its side view, which exhibits a work peg 2 and a retention shank 3, each having a circular cross section, as it also can be seen in Figure 2. The peg 2 exhibits a front surface 4 and flattenings 5, what creates kind of a wedge shape. As it can be seen in Figure 2, the front surface 4 creates together with the lateral surface 6 of the peg 2 deep-drawing edges 7. In Figure 1 only the front edge can be seen. This die is located in a press with a tool holder, in order to be able to accomplish a force stroke in direction of the arrow I, what is not shown in detail.

Underneath the die 1 a bottom die 8 is located in the press, with a deep-drawing opening 9, with firm radial walls 10 and a likewise immovable base 11. Between base 11 and wall 10 a circular groove 12 is provided. In the base itself a recess in the shape of a key groove 13 is located, which exhibits edges 14 towards the bottom space. In the section through the bottom

die shown in figure 3, it can be seen clearly that this key groove 13 leads into the circular groove 12 at its two ends.

Three plates are put on the bottom die 8, i.e. two metal plates 15 and 17 and a plastic plate 16 arranged between them. In order to create a connection according to the invention between the three plates 15, 16 and 17, the die 1 is driven downward in the direction of the arrow 1, whereby it deep-draws in the first part of its operating cycle the three plates 15, 16 and 17 into the deep-drawing opening 9, until the first lower plate 15 touches the base 11. After this, due to the resulting resistance and the continued pressing power, the three plates are squeezed together. During this squeezing procedure the first plate 15 is pressed into the key groove 13, so that thereby the flow process is obstructed radial outward. The squeezed material thus flows primarily in direction of the serration, instead of crosswise to it. The plate sections of the plates 16 and 17, which are drawn into the deep-drawing opening 9 during the deep-drawing procedure, are thinned and, if necessary, separated in the corresponding places by the edges 7 of the die 1, while in the places, where the flattenings 5 are in effect, these improve the squeezing procedure transverse to their course.

In figure 4 a section through a finished connection point is shown, which corresponds to the represented position of the die 1.

In Figure 5 a section through the same connection point is shown, however it is rotated 90°, i.e. that here splittings 18 on the inside of the point are created by the deep-drawing edges 7. During this separation process the first plate 15 is not affected according to the invention. As it can be seen in Figure 5, the deep-drawn and squeezed plate section 19 belonging to the plate 15 shows elevations 20, created by the circular groove 12 and the key groove 13. The plate section 21 of the plate 16, consisting of plastic, and the plate section 22 of the third plate 17 are partially separated from each other by the deep-drawing edges, according to the section in Figure 5, while in the other, 90° rotated position, these plate sections 19, 21 and 22 are still fully connected with the plates 15, 16, 17.

All features represented in the description, the following claims and the drawing can be substantial for the invention both individually and in arbitrary combination with one another.

Reference number list

- 1 Die
- 2 Work peg
- 3 Retention shank
- 4 Front surface
- 5 Flattenings
- 6 Lateral surface
- 7 Deep-drawing edges
- 8 Bottom die
- 9 Deep-drawing opening
- 10 Side walls
- 11 Base
- 12 Circular groove
- 13 Key groove
- 14 Edges
- 15 Metal plate
- 16 Plastic plate
- 17 Metal plate
- 18 Splitting
- 19 Plate section
- 20 Elevations
- 21 Plate section
- 22 Plate section

Claims

1. Method for connecting plates lying on top of one another, with which stacked plate sections (19, 21, 22) of these plates (15, 16, 17) are deep-drawn together into a deep-drawing opening (9) of the bottom die (8) by a die (1) and its associated bottom die (8) with a actually unyielding base (11) and are afterwards radially squeezed wide transverse to the deep-drawing direction, due to the resistance of the base (11) (Clinching). Hereby at least the bottom part of the first (lowest) plate section (19), seen from the bottom die (8), and the above second and additional plate sections (21, 22) sub-seize their associated plate at least partially, characterized by the fact,
 - that during the deep-drawing and squeezing procedure, due to the shape of the work area (4, 5, 6) of the die (1), the displacement of the material is larger in a first cross direction, than in a second cross direction, which is approximately 90° rotated, with according soft transitions of the displaced material from the first to the second cross direction.
 - that thereby the wall parts of the second and additional plate sections (21, 22) in the area of the first cross direction, running in deep-drawing direction, are accordingly thinned more, up to tear separation, without the first plate section (19) being thinned or weakened accordingly, so
 - that in the first cross direction a lower thickness of the wall parts remains, with a strong sub-seizing of the plates (15, 16, 17) by the bottom parts of the plate sections (19, 21, 22), and that with accordingly soft transition in the second cross direction a substantially larger thickness of the wall parts remains, with less sub-seizing of the plates (15, 16, 17) by the bottom parts of the plate sections (19, 21, 22).
2. Method according to claim 1, characterized by the fact that the die (1) and the deep-drawing opening (9) exhibit a circular or an oval cross section and that the work area (4, 5, 6) of the die (1) is designed wedge-shaped with a to a large extent rectangular front surface (4), so that at the opposite sides of the die (1) strong thinnings up to tear separation of the wall parts of the second and additional plate sections (21, 22) take place and that the radial displacement is held back by the wedge areas (5).
3. Method according to claim 1 or 2, characterized by the fact that the volume of the deep-drawing opening (9) is constant in the deep-drawing direction (press direction) and transverse to the deep-drawing direction (press direction), so that during the squeezing procedure the longitudinal extension as well as the transverse extension of the deep-drawn plate sections (19, 21, 22) is limited unyieldingly and an edge area, running in deep-drawing direction, results.
4. Method according to claim 1 or 2, characterized by the fact that during the squeezing procedure the volume of the deep-drawing opening (9) can be increased in longitudinal extension and/or transverse extension.
5. Method according to one of the preceding claims, thereby characterized,
 - that during the squeezing procedure existing edges (14) of recesses (13), pointing towards the die, engage at the base (11) of the deep-drawing opening (9) in the bottom of the first plate section (19) and obstruct its radial outward flow and

- that displaced material from the second or above plate section (21, 22) flows into the resulting radial clearances above the first plate section (19).
6. Method according to claim 5, characterized by the fact that the obstruction of the radial outward flows takes place in the first cross direction.
 7. Method according to one of the preceding claims, characterized by the fact that the first and third plate (15, 17) consists of metal and that the intermediate plate (16) consists of plastic.
 8. Method for connecting plates (15, 16, 17) lying on top of one another by clinching, in particular for the implementation of the method according to one of the preceding claims, with at bottom die (8) placed in a device for creating force, the die exhibiting a deep-drawing opening (9) with an unyielding base (11), and with a die (1), driven toward the bottom die (8) transverse to the to be connected plates (15, 16, 17) whereby at least the bottom part of the first (lowest) plate section (19), seen from the bottom die (8), and the above second and additional plate sections (21, 22) sub-seize their associated plate at least partially, thus characterized
 - that the work area (4, 5, 6) of the die (1) and/or its work peg (2) are designed wedge-shaped, with an essentially rectangular front surface (4), running transverse to the deep-drawing direction, whose narrow sides cross themselves with the lateral surface (6) of the work peg (2).
 - that between the lateral surface (6) and the face of the front surface (4) two wedge-shaped work areas (5) are present, which are opposing each other diagonally to the deep-drawing direction and are mirror-symmetrically to each other, for a smaller radial material displacement.
 - that the distance between the lateral surface (6) of the die (1) and the side walls (10) of the deep-drawing opening (9) prevent cutting the first (lowest) plate section (19) during the deep-drawing and the squeezing procedure both in deep-drawing direction and in cross direction.
 9. Method according to claim 5, characterized by the fact that the die (1) above the wedge shape and the deep-drawing opening (9) exhibit a circular or oval cross section.
 10. Method according to claim 8 or 9, characterized by the fact that the deep-drawing opening (9) in the bottom die (8) is designed as a blind opening, that its side walls (10) run in deep-drawing direction and are unyielding, like the base (11) of the deep-drawing opening.
 11. Method according to claim 10, characterized by the fact that in the boundary area of the base (11) of the deep-drawing opening (9) a circular crease (12) is present, with a cross section that is enlarging in upward direction.
 12. Method according to claim 8 or 9, characterized by the fact that the volume in the deep-drawing opening can be increased after the deep-drawing procedure and during the squeezing procedure lengthwise and/or in cross direction.

13. Method according to claim 12, characterized by the fact that the sidewalls of the deep-drawing opening are designed radial flexible.
14. Device according to one of the claims 8 to 13, characterized by the fact that the base, although actually unyielding, can be adjusted a certain stroke length when exceeding a certain pressing force of the die.
15. Device according to one of the claims 8 to 14, characterized by the fact that in the base (11) of the deep-drawing opening (9) recesses (13) are present, with edges (14) towards the base, which fit in the bottom of the first plate section (19) after the deep-drawing procedure and obstruct a radial outward flow of the squeezed material of this plate section (19).
16. Device according to claim 15, characterized by the fact that the recesses are designed as concentric and/or central symmetrical key grooves (13), which are arranged continuously and/or misaligned to each other.

Summary

A method and a device for clinching are proposed, in which the die I exhibits a wedge-shaped work area 4, 5, 6, causing different material displacement in two, 90° misaligned, cross directions.

Fig. 1

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
4. Januar 2001 (04.01.2001)

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(10) Internationale Veröffentlichungsnummer
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(51) Internationale Patentklassifikation⁷: B21D (74) Anwälte: SCHUSTER, Gregor usw.; Wiederholdstrasse 10, D-70174 Stuttgart (DE).

(21) Internationales Aktenzeichen: PCT/DE00/01883

(81) Bestimmungsstaaten (national): CN, JP, KR, US.

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(25) Einreichungssprache: Deutsch

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199 29 377.5 25. Juni 1999 (25.06.1999) DE

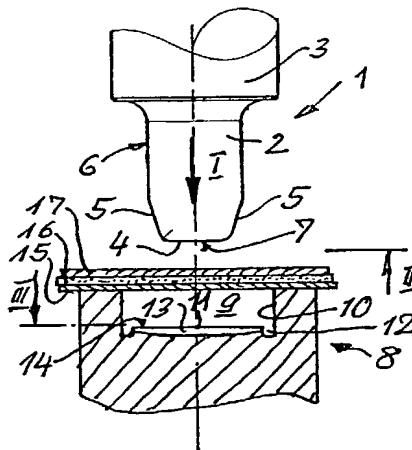
Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): TOX PRESSOTECHNIK GMBH & CO. KG [DE/DE]; Riedstrasse 4, D-88250 Weingarten (DE).

(72) Erfinder; und
(75) Erfinder/Anmelder (nur für US): RAPP, Eugen [DE/DE]; Max-Reger-Strasse 4, D-88276 Berg (DE).

(54) Title: METHOD AND DEVICE FOR CONNECTING SUPERIMPOSED PLATES

(54) Bezeichnung: VERFAHREN UND VORRICHTUNG ZUM VERBINDELN AUF EINANDERLIEGENDER PLATTEN



(57) Abstract: The invention relates to a pressjoining method and device, whereby the shaping punch 1 has a wedge-shaped working surface (4, 5, 6). Said working surface displaces the material differently in two transverse directions which are rotated about 90°.

WO 01/00347 A2

(57) Zusammenfassung: Es wird ein Verfahren und eine Vorrichtung für das Durchsetzfügen vorgeschlagen, bei dem der Formstempel(1) eine keilförmige Arbeitsfläche (4, 5, 6) aufweist, mit dadurch unterschiedlicher Materialverdrängung in zwei um 90° verdrehten Querrichtungen.

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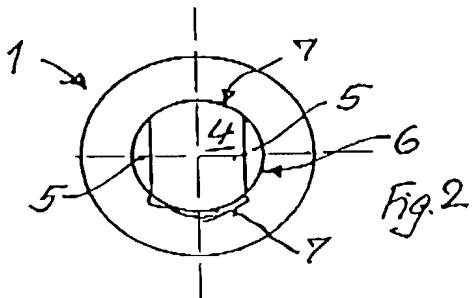


Fig. 2

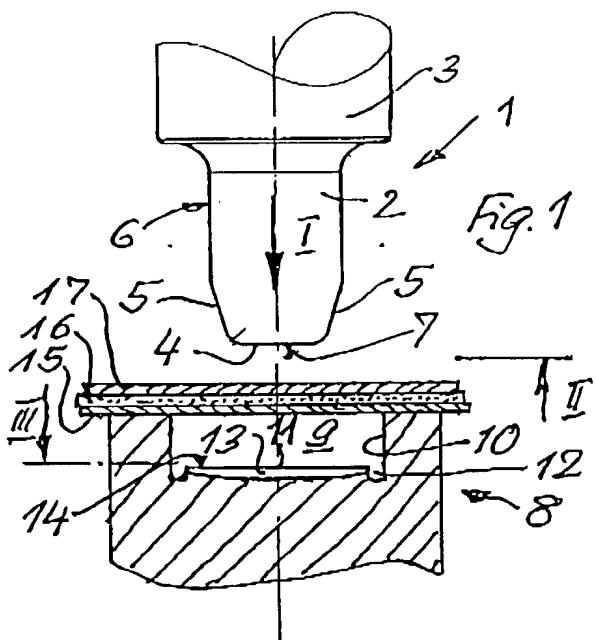


Fig. 1

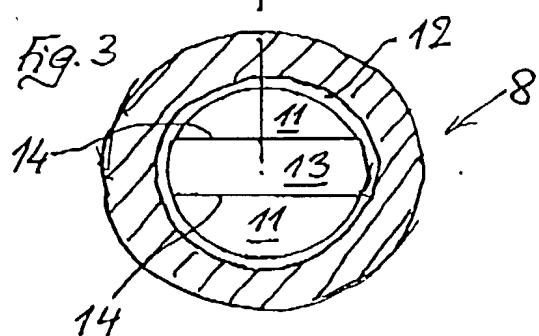


Fig. 3

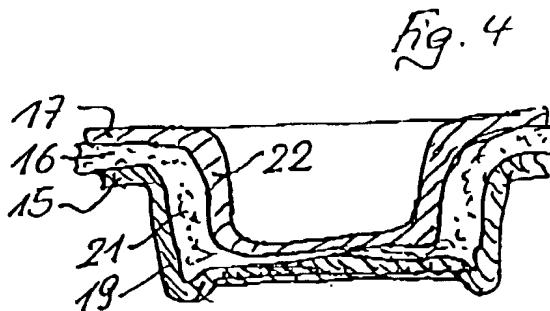


Fig. 4

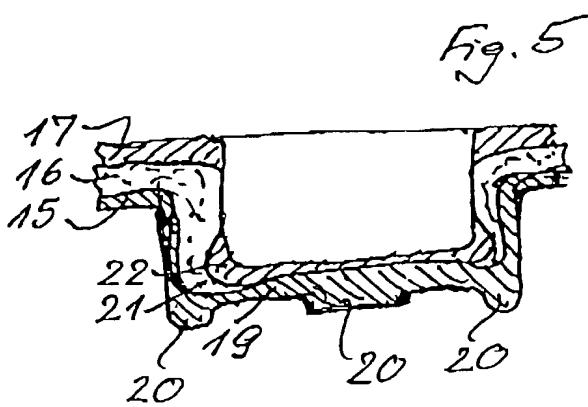


Fig. 5

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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

Declaration Submitted with Initial Filing OR Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	12380
First Named Inventor	RAPP, Eugene
COMPLETE IF KNOWN	
Application Number	10019727
Filing Date	
Art Unit	
Examiner Name	

As the below named Inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original and first Inventor of the subject matter which it claimed and for which a patent is sought on the invention entitled:

METHOD AND DEVICE FOR CONNECTING SUPERIMPOSED PLATES

(Title of the Invention)

the specification of which

is attached hereto

OR

was filed on (MM/DD/YYYY)

12/20/2001

as United States Application Number or PCT International

Application Number

10019727

BRB/DRM/BBM/BPM/BUS

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, Inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, Inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	Certified Copy Attached? NO
PCT/DE00/01883	PCT	06/14/2000	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

(Page 1 of 2)

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NO. 2902 P. 3

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Name

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Chicago

IL

60604

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USA

312.922.6262

312.922.7747

Country

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NAME OF SOLE OR FIRST INVENTOR : A petition has been filed for this unsigned inventorGiven Name EugenFamily Name Rapp

(first and middle (if any))

or Surname

Inventor's Signature /V/M/RDate 04/04/2002

Berg

DEK

Germany

German

Residence: City

State

Country

Citizenship

Mailing Address Max-Reger-strabe 4

Berg

D-88276

Germany

City

State

ZIP

Country

NAME OF SECOND INVENTOR:

 A petition has been filed for this unsigned inventorGiven Name
(first and middle (if any))Family Name
or Surname

Inventor's Signature

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Residence: City

State

Country

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 Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.